

Remarks

Applicant's response to the non-final Office Action mailed January 31, 2011 is below. Claims 1-7, 9-14, 16, and 18-19 are currently pending. Claims 1 and 11 have been amended to recite surfaces coated in "a Co-Cr alloy coating" instead of "a coating material based on a chromium-nickel alloy". Support for this amendment is found in paragraph [0031], and no new matter has been added. Upon entry of the amendments described above, claims 1-7, 9-14, 16, and 18-19 will be pending in the application.

I. Response to Claim Rejections under 35 U.S.C. §103

Claims 1-7, 9-14, 16, and 18-19 were rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 5,899,941 to Nishijima et al. ("*Nishijima*") in view of U.S. Patent No. 6,322,588 to Ogle et al. ("*Ogle*"). Applicant traverses for three reasons. First, a person of skill in the art would have lacked the motivation to modify *Nishijima* to include the materials recited in the present claims. Second, a person of skill in the art would not have combined the cited references to arrive at the present claims. Third, the claims have been amended to distinguish the cited combination of references. For any of these reasons, the rejection is improper and must be withdrawn.

A. A skilled artisan would not have been motivated to modify *Nishijima* to include the materials recited in the present claims.

A person of skill would not have modified *Nishijima* as alleged in the Office Action. *Nishijima* teaches generally connecting bodies 2 and 3 that are formed from metallic materials, such as stainless steel, titanium, tantalum, platinum, and alloys thereof, or alternatively from aluminum, zirconia, or ceramic materials. *Nishijima* extols these materials for their mechanical strength, corrosion resistance, and stability within or an affinity for use in the human body. *See Nishijima*; column 5, lines 20-42.

Nishijima also teaches a coating material for one of the connecting bodies. The coating material is applied to only one of the connecting bodies, and the coating is formed from a high polymer resin such as polyethylene. *Nishijima* explains that these polymer resin materials have a hardness that limits compression or deformation of the coating within the human body while exhibiting excellent wear characteristics in the face of friction. *See Nishijima*; column 5, lines 43-50.

Thus, the teachings of *Nishijima* are essentially the opposite of the claimed configuration. While the claims recite at least one polymeric part with a metallic coating on its sliding surface, *Nishijima* generally teaches a metallic part with a polymeric coating its sliding surface. *Nishijima* also indicates that this configuration of materials is desirable for mechanical strength, corrosion resistance, stability within the body, hardness, compression and deformation resistance, and wear. Thus, a person of skill would lack the motivation to reverse the material configuration as alleged in the Office Action.

B. A skilled artisan would not have combined the cited references to arrive at the present claims.

Even if a person of skill was motivated to modify *Nishijima*, a person of skill would not have modified *Nishijima* with the teachings of *Olge* to arrive at the claimed configuration. *Olge* is generally directed to device such as a pacemaker, a heart valve, a coronary stent, or a vascular stent, although orthopedic implants are mentioned offhandedly. *See Olge*; column 3, line 26 – column 4, line 3. The device includes a polymer substrate with a metallic “coating”. *See Olge*; column 2, lines 20-25. The “coating” is thick enough so that its mechanical properties dominate the overall mechanical properties of the device. *Olge* explains that the “metal coating is preferably thick enough such that the mechanical properties, such as the mechanical strength, durability, or resiliency, of the metal/polymer composite are significantly influenced by the metal.” *Olge*; column 2, lines 24-28 (emphasis added). *Olge* also states:

In preferred embodiments, the metal coating is applied as a relatively thick coating, such that the mechanical properties of the composite are significantly determined by the metal coating. The application of a relatively thick metal coating to influence the mechanical properties of the composite can be distinguished from the application of thin metal coatings solely to influence the surface properties of the coated product without significantly influencing the mechanical properties.

See Olge; column 3, lines 14-24 (emphasis added). *Olge* also states that “[s]ince significant mechanical strength is contributed by the metal coating, optimizing the mechanical strength of the polymer substrate may not be critical.” *Olge*; column 5, lines 32-35 (emphasis added). *Olge* further indicates that, in the case of orthopedic implants, the metal coating may need to be especially thick to provide the implant with the needed mechanical strength. *See Olge*; column 3, lines 46; column 6, lines 20-24.

Olge also identifies a number of polymers that may be used for its substrate, one of which is polyetheretherketone (PEEK). Suitable polymers such as PEEK are stable for the process of depositing the metal coating on the polymer substrate to form the device. *See Olge*; column 4, line 54 -67.

On the contrary, the claimed part is formed from PEEK or one of the other polymers recited in the claim because these polymers have a modulus of elasticity comparable to cortical bone. Thus, the resulting part has mechanical properties that are analogous to its site of implantation. *See Applicant’s Specification*; paragraph [0032].

Based on the teachings of *Olge*, a person of skill would not have modified the part of *Nishijima* to include a polymer body that is PEEK. A person of skill would have found it important from *Olge* for the part to have the mechanical properties of metal. The *Nishijima* part is already formed of metal, and therefore a person of skill would hesitate to substitute a different material.

Even if a person of skill did want to modify the *Nishijima* part to be formed from a material other than metal, a person of skill would not have selected the polymer PEEK. *Olge* teaches forming the

substrate from PEEK because it is suitable for depositing a thick metal coating therein. However, *Nishijima* does not employ a metal coating. Additionally, the claimed polymer part has a metallic coating on its sliding surfaces that is provided only to “influence the surface properties of the coated product without significantly influencing the mechanical properties,” a configuration that *Olge* specifically counsels against. See *Applicant’s Specification*; [paragraph {0031}]. *Olge*; column 5, lines 32-35 (emphasis added).

C. The claims have been amended to distinguish the cited combination of references.

Through this response, Applicant has amended the claims to recite a Co-Cr alloy coating. Independent claim 1 now recites sliding and countersliding surfaces that are coated with a Co-Cr alloy coating, and independent claim 11 recites a sliding surface that is coated in a Co-Cr alloy coating.

Neither of the cited references teach such a Co-Cr alloy coating. *Nishijima* teaches a coating for one of its surfaces, but the coating is formed from a high polymer resin such as polyethylene. See *Nishijima*; column 5, lines 43-50. *Olge* teaches a coating formed from a biocompatible metal, such as titanium, cobalt, stainless steel, nickel, iron alloys, cobalt alloys, such as Elgiloy®, a cobalt-chromium-nickel alloy, and MP35N, a nickel-cobalt-chromium-molybdenum alloy, and Nitinol®, a nickel-titanium alloy. *Olge*; column 4, lines 13-23. Notably, the claimed alloy, Co-Cr alloy, is not included among the list of coating materials identified in *Olge*. It appears that *Olge* either did not contemplate using a Co-Cr alloy coating or that *Olge* purposefully excluded such a coating. For at least these reasons, the claims would not have been obvious.

Conclusion

Applicant submits that the pending claims are novel and would not have been obvious over the references of record. Therefore, Applicant respectfully asks the Examiner to reconsider the rejections and to allow each of the claims. Applicant invites the Examiner to call the Attorney below at any time if the Examiner believes a telephone conversation would facilitate the examination of this application.

Respectfully submitted,

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